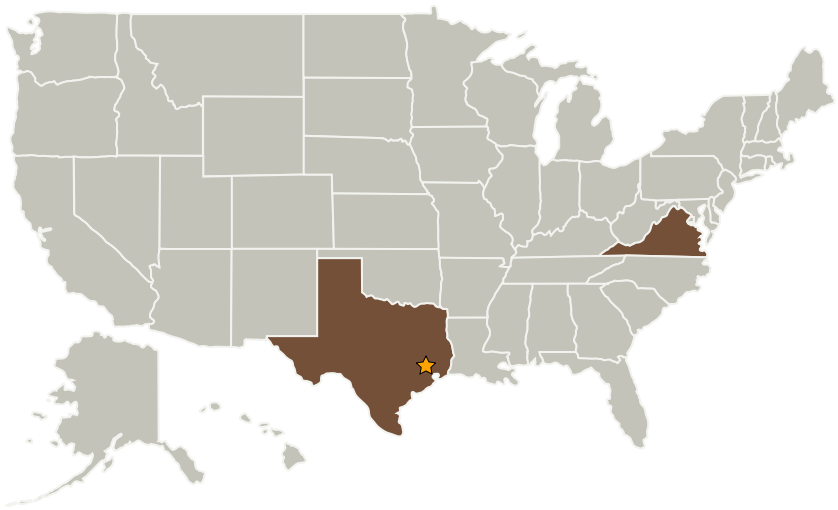
Reconfigurable, Digital EVA Radio, Phase II

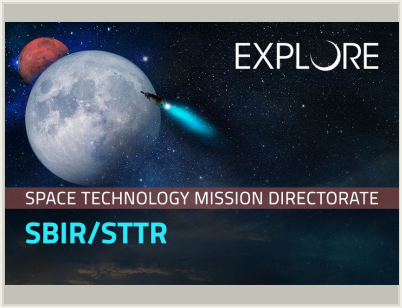
Completed Technology Project (2006 - 2008)

Project Introduction

The nature of human exploration missions to the Moon and Mars demands a frequency-agile, reconfigurable, durable digital radio delivering telemetry, ranging, voice, video, and data, with low Size, Weight, and Power (SWAP), and easy operation in the demanding space environment of Extra Vehicular Activity (EVA). AeroAstro and Virginia Tech propose to continue development of the EVA radio, building upon work accomplished in Phase I, combining AeroAstro's history of creating efficient space technology solutions and Virginia Tech's experience and expertise in Software Defined Radio (SDR) technology. AeroAstro will design and fabricate a prototype demonstrating the key requirements of the EVA radio-reconfigurability and frequency agility. The prototype will incorporate an adaptable modular RF front end for frequency agility, and a transmultiplexer-based digital back end, capable of a full range of sophisticated wireless waveforms, through software-defined reconfiguration of the same physical hardware. The prototype will also exhibit innovative solutions to extending SDR architecture standards to the demands of space applications. The proposed innovations fill critical technological gaps and mesh with other promising technological developments, such as micromachined passive RF components and fault-tolerant reconfigurable electronics, not only assuring the safety and success of human space exploration missions, applicable to space applications in general.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
AeroAstro Corporation	Supporting Organization	Industry	Ashburn, Virginia

Primary U.S. Work Locations	
Texas	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems